I CLAIM:

1. A tire having at least one reinforcing ply formed of reinforcement elements embedded in vulcanized rubber, characterized in that the reinforcement elements for said ply are individually coated in a rubber mix (B, B_1), referred to as "coating mix", having a given composition and physical properties, said reinforcement elements arranged parallel to each other being covered on one face by a first rubber layer (A, A_1), referred to as "first calendering layer", of constant composition and properties, whereas said elements are covered on the opposite face by a second rubber calendering layer (C, D), of composition and properties which are ~~variable~~ varied according to the meridian position on the ply within the tire.

2. A tire according to Claim 1, characterized in that the composition and properties of the first layer (A, A_1) are identical to the composition and properties of the coating mix (B, B_1) of the reinforcement elements of the ply.

3. A tire according to Claim 2, characterized in that the reinforcing ply is a carcass reinforcement ply.

4. A tire according to Claim 3, characterized in that the carcass reinforcement ply has a main part and an upturned part, each part having an inner and outer face, and in which, in the main part on its axially outer face and the upturned part on its axially inner face, the carcass reinforcement ply is calendered with the first layer A of constant composition and properties, whereas the opposite faces are covered with the second calendering layer C of composition and properties which are ~~variable~~ varied according to the meridian length of the ply within the tire.

5. A tire according to Claim 4, characterized in that the coating mix B has the same composition and properties as those of the mix of the first calendering layer A, the secant modulus of elasticity in tension of said mix in the vulcanized state, measured at a relative elongation of 0.1, being between 6 and 12 MPa, whereas the

Mooney viscosity of said mix in the non-vulcanized state is between 60 MU and 90 MU.

6. A tire according to Claim 4 having a tread and in which the carcass reinforcement ply forms an upturn about a bead wire, characterized in that the second layer C is formed:

* of a first band C_1 of rubber mix, extending from a point T of the bead wire radially closest to the axis of rotation to a point of intersection S between the average axis of the meridian profile of the carcass ply and a line perpendicular to said profile lowered by the end of the upturn of the ply, the zone TS being referred to as the "bead zone",
* of a second band C_2 of rubber mix, extending from said point T to a point R representing the end of the upturn of the carcass ply, the zone TR being referred to as the "upturn zone",
* of a third band C_3 of rubber mix, between the point S and a point of intersection V of the average axis of the meridian profile of the carcass ply with a straight line parallel to the equatorial plane and distant from said plane by an amount between 30% and 45% of the axial width of the tread, the zone SV being referred to as the "sidewall and shoulder zone",
* of a fourth band C_4 of rubber mix, between the point V and the equatorial plane XX', forming what is called the "crown zone", the bands C_1, C_2 and C_4 being formed of the same mix, the elasticity modulus of which is between 6 MPa and 12 MPa and the Mooney viscosity of which is between 60 MU and 90 MU, whereas the band C_3 is formed of a mix, the elasticity modulus of which is between 3.5 MPa and 5 MPa and the Mooney viscosity of which is between 55 MU and 75 MU.

7. A tire according to Claim 2, characterized in that the reinforcing ply is a ply of the crown reinforcement, formed of reinforcement elements which are parallel to each other within said ply and form an acute angle with the circumferential direction

of the tire, the meridian position being determined on the basis of the axial width of said ply.

8. A tire according to Claim 7, characterized in that it comprises a crown reinforcement formed of at least two working crown plies, the ply radially closest to the carcass reinforcement being calendered on its radially inner face with a first calendering layer A_1 of constant composition and properties, and on its radially outer face with a second calendering layer D of composition and properties which are variable according to the axial width of said ply, whereas the ply radially to the outside is calendered on its radially outer face with the first calendering layer A_1 of constant composition and properties and on its radially inner face with the second calendering layer D of composition and properties which are variable according to the axial width of said radially outside ply.

9. A tire according to Claim 8, characterized in that the rubber mix forming firstly the first calendering layer A_1 and secondly the coating mix B_1 of the reinforcement elements of the crown ply has, in the non-vulcanized state, a Mooney viscosity of between 65 MU and 95 MU, and in the vulcanized state a secant modulus of elasticity in tension, measured at 10% relative elongation, of between 15 MPa and 30 MPa.

10. A tire according to Claim 9, characterized in that the second calendering layers D are formed of at least three zones, a central zone D_1, formed of a rubber mix having in the vulcanized state a high modulus of elasticity in tension of between 15 MPa and 30 MPa, and in the non-vulcanized state a Mooney viscosity of between 65 MU and 95 MU, and two lateral zones D_2 formed of a rubber mix having in the vulcanized state a low modulus of elasticity in tension of between 3 MPa and 9 MPa, and in the non-vulcanized state a Mooney viscosity of between 50 and 85 MU.

11. A tire according to Claim 1, characterized in that the composition and

properties of the first layer (A, A_1) are different from the composition and properties of the coating mix (B, B_1) of the reinforcement elements of the ply.

12. A tire according to Claim 11, characterized in that the reinforcing ply is a carcass reinforcement ply.

13. A tire according to Claim 12, characterized in that the carcass reinforcement ply has a main part and an upturned part, each part having inner and outer faces, and in which the carcass reinforcement ply, in its main part on its outer face and in its upturned part on its axially inner face, is calendered with the first layer A of constant composition and properties, whereas the opposite faces are covered with the second calendering layer C of composition and properties which are variable according to the meridian length of the ply within the tire.

14. A tire according to Claim 13, characterized in that the coating mix B in the vulcanized state has an elasticity modulus of between 27 MPa and 45 MPa and in the non-vulcanized state a Mooney viscosity of between 70 MU and 100 MU, whereas the elasticity modulus in the vulcanized state of the mix of the first calendering layer A is between 10 MPa and 15 MPa and has a Mooney viscosity in the non-vulcanized state of between 60 MU and 90 MU.

15. A tire according to Claim 4, having a tread and in which the carcass reinforcing ply forms an upturn about a bead wire, characterized in that the second layer C is formed:

* of a first band C_1 of rubber mix, extending from a point T of the bead wire radially closest to the axis of rotation, to a point of intersection S between the average axis of the meridian profile of the carcass ply and the line perpendicular to said profile lowered by the end of the upturn of the ply, the zone TS being referred to as the "bead zone",

* of a second band C_2 of rubber mix, extending from said point T to a point R representing the end of the upturn of the carcass ply, the zone TR being referred to as the "upturn zone",
* of a third band C_3 of rubber mix, between the point S and a point of intersection V of the average axis of the meridian profile of the carcass ply with a straight line parallel to the equatorial plane and distant from said plane by an amount which may be between 30% and 45% of the axial width of the tread, the zone SV being referred to as the "sidewall and shoulder zone",
* of a fourth band C_4 of rubber mix, between the point V and the equatorial plane XX', forming what is called the "crown zone", the bands C_2 and C_3 being formed of the same mix, the elasticity modulus of which is between 3.5 MPa and 5 MPa and the Mooney viscosity of which is between 55 MU and 75 MU, whereas the band C_1 is formed of a mix, the elasticity modulus of which is between 10 MPa and 15 MPa and the Mooney viscosity of which is between 60 MU and 90 MU, and that the band C_4 is formed of a mix, the elasticity modulus of which is between 6 MPa and 12 MPa and the Mooney viscosity of which is between 60 MU and 90 MU.

16. A tire according to Claim 12, characterized in that the carcass reinforcement ply has a main part and an upturned part, each part having inner and outer faces, and in which the carcass reinforcement ply, in its main part on its inner face and in its upturned part on its axially outer face, is calendered with the first layer A of constant composition and properties, whereas the opposite faces are covered with the second calendering layer C' of composition and properties which are variable according to the meridian length of the ply within the tire.

17. A tire according to Claim 16, characterized in that the coating mix B in the vulcanized state has an elasticity modulus of between 27 MPa and 45 MPa and in the non-vulcanized state a Mooney viscosity of between 70 MU and 100 MU, whereas the elasticity modulus in the vulcanized state of the mix of the first calendering layer A

is between 3.5 MPa and 5 MPa and a Mooney viscosity in the non-vulcanized state of between 55 MU and 75 MU.

18. A tire according to Claim 4, including a tread and in which the carcass reinforcing a ply forms an upturn about a bead wire, characterized in that the second layer C is formed:

* of a first band C'_1 of rubber mix, extending from the point U of the upturn of the carcass ply, located substantially at mid-height of said upturn, to a point of intersection S between the center axis of the meridian profile of the carcass ply and a line perpendicular to said profile lowered by the end of the upturn of the ply,
* of a second band C'_2 of rubber mix, extending from said point U to a point R representing the end of the upturn of the carcass ply,
* of a third band C_3 of rubber mix, between the point S and a point of intersection V of the center axis of the meridian profile of the carcass ply with a straight line parallel to the equatorial plane and distant from said plane by an amount which may be between 30% and 45% of the axial width of the tread, the zone SV being referred to as the "sidewall and shoulder zone",
* of a fourth band C_4 of rubber mix, between the point V and the equatorial plane XX', forming what is called the "crown zone", the bands C'_2 and C'_3 being formed of the same mix, the elasticity modulus of which is between 3.5 MPa and 5 MPa and the Mooney viscosity of which is between 55 MU and 75 MU, whereas the band C'_1 is formed of a mix, the elasticity modulus of which is between 10 MPa and 15 MPa and the Mooney viscosity of which is between 60 MU and 90 MU, and that the band C'_4 is formed of a mix, the elasticity modulus of which is between 6 MPa and 12 MPa and the Mooney viscosity of which is between 60 MU and 90 MU.

19. A tire according to Claim 1, characterized in that the reinforcing ply is a crown reinforcement ply formed of circumferential elements.

20. A tire according to Claim 1, characterized in that the reinforcing ply is a bead reinforcement ply.

21. A tire according to Claim 1, characterized in that the reinforcing ply is a sidewall reinforcement ply.

22. A process for manufacturing a tire according to one of Claims 3 or 12, comprising, firstly, building on a drum a non-vulcanized cylindrical carcass reinforcement blank comprising at least one carcass ply, characterized in that the building of the carcass ply requires, after the laying on the cylindrical building drum for the cylindrical carcass reinforcement blank of different layers of rubber mixes and different bead reinforcement plies, the laying of an intermediate product referred to as "one-face calendered ply", which is non-vulcanized and formed of reinforcement elements coated individually in a rubber mix B, referred to as "coating mix", having a given composition and physical properties, said reinforcement elements arranged parallel to one another being covered on one face with a first rubber layer A, referred to as "first calendering layer" or "supporting layer", of constant composition and properties, said "one-face calendered ply" being brought into contact with a second calendering layer C of composition and properties which are variable according to the position on the meridian length of the ply within the tire.

23. A process according to Claim 22, characterized in that the non-vulcanized "one-face calendered ply" is used with reinforcement elements coated individually in a non-vulcanized rubber mix B.

24. A process according to Claim 23, characterized in that the non-vulcanized "one-face calendered ply" is used with reinforcement elements coated individually in a rubber mix B which is pre-vulcanized at a given temperature using a suitable heating means.

25. A process according to Claim 22, characterized in that the contacting is effected by the laying, on the different layers of rubber mixes and the different bead reinforcement plies covering the cylindrical building drum for the cylindrical carcass reinforcement blank, of the "one-face calendered ply" of coated reinforcement elements, and the laying on the visible coated elements of the "one-face calendered ply" of the second calendering layer C of composition and properties which are variable according to the meridian length of the ply within the tire.

26. A process according to Claim 22, characterized in that the contacting is effected by the laying, on the different layers of rubber mixes and the different bead reinforcement plies covering the cylindrical building drum for the cylindrical carcass blank, of the second calendering layer C of composition and properties which are variable according to the meridian length of the ply within the tire and the laying on said second layer of the "one-face calendered ply" of coated reinforcement elements, said elements being laid on the second layer C.

27. A process for manufacturing a tire according to Claim 7, comprising, at a given instant, of arranging on a non-vulcanized toric carcass reinforcement blank a crown ply of reinforcement elements which are parallel to each other within the ply and form an acute angle with the circumferential direction, characterized in that the building of the crown ply requires, after the laying on the toric carcass blank of the different layers of rubber mixes radially separating the carcass reinforcement from the crown reinforcement, the laying of an intermediate ply referred to as "one-face calendered ply", which is non-vulcanized and formed of reinforcement elements coated individually in a rubber mix B_1, referred to as coating mix, having a given composition and physical properties, said reinforcement elements arranged parallel to one another being covered on one alternative face with a first rubber layer A_1 or supporting layer, of constant composition and properties, said "one-face calendered ply" being brought into contact with a second calendering layer D of composition and

properties which are variable according to the axial width of the crown ply within the tire.

28. A manufacturing process according to Claim 27 for a tire having a crown reinforcement formed of two plies, characterized in that there is laid:

a) on a non-vulcanized, toric carcass reinforcement blank, a "one-face calendered ply", the supporting layer A_1 of said ply being radially to the inside,

b) then, on the visible reinforcement elements of the "one-face calendered ply", the second rubber calendering layer D of the radially inner crown ply, which layer is of composition and properties which are variable according to the axial width of the ply within the tire, the layers A_1 and D forming the crown ply closest to the carcass reinforcement with the coated elements,

c) then the second rubber calendering layer (D) of the crown ply radially adjacent the inner ply, which layer is of composition and properties which are variable according to the axial width of the ply radially adjacent to the inner ply within the tire,

d) then, radially to the outside, the "one-face calendered ply", presented such that the visible reinforcement elements are radially to the inside.

29. A process for manufacturing a non-vulcanized "one-face calendered ply" formed of reinforcement elements coated individually in a pre-vulcanized rubber mix (B, B_1), characterized in that the reinforcement elements coming from winding reels are fed to an extruder, the head of which comprises a plurality of spinnerets for coating said elements with the layer (B, B_1) of coating mix to a predetermined thickness, then are fed to a means for separating each cable from the axially adjacent cable by a desired pitch, to arrive at a calender with two rollers, which feed a flat band of supporting calendering mix (A, A_1), on which the coated elements will make contact with the radially upper part of an upper of the two rollers, a presser means for

applying a pressure to the coated elements, which pressure is automatically controlled according to the desired depth of embedding of the elements within the supporting layer (A, A_1) and a roller laying an anti-adhesion backing strip on one of the faces of the ply coming from the calender, so as to wind said ply on a winding drum, and then to make the cuts at the desired angle, to form web widths which can be butt-jointed and to obtain the "one-face calendered ply".